

cold far below those hitherto attained by the employment of the latter substance. Ammonia was obtained in the state of solid white crystals, and retained this form at a temperature of -103° .

The following liquids could not be made to freeze at -166° ; namely, chlorine, ether, alcohol, sulphuret of carbon, caoutchoucine, camphine, and rectified oil of turpentine.

The following gases showed no signs of liquefaction when cooled by the carbonic acid bath, even when subjected to great pressure; namely,

Hydrogen, Oxygen, at a pressure of 27 atmospheres.

Nitrogen and nitric oxide at a pressure of 50 atmospheres.

Carbonic oxide at a pressure of 40 atmospheres.

Coal-gas at a pressure of 32 atmospheres.

January 23, 1845.

SIR JOHN WILLIAM LUBBOCK, Bart., V.P. and Treas. in the Chair.

1. "Observations de la Déclinaison et Intensité Horizontales Magnétiques observées à Milan pendant vingt-quatre heures consécutives le 29 et 30 de Décembre 1844." Par M. Carlini.

2. "Remarks having reference to the Earthquake felt in Demerara on the morning of the 30th of August 1844." By Daniel Blair, Esq., Colonial Surgeon of British Guiana. Communicated by the Right Honourable Lord Stanley.

The earthquake here described commenced at twenty-seven minutes past three o'clock, a.m. on the 30th of August, and continued during two or three minutes. It appeared to be composed of two waves or pulsations quickly succeeding each other, and producing gyratory movements of the earth. Though the alarm it occasioned was very great, no serious damage seems to have resulted from it.

3. "An Account of the artificial formation of a Vegeto-alkali." By George Fownes, Esq., Chemical Lecturer in the Medical School of the Middlesex Hospital. Communicated by Thomas Graham, Esq., F.R.S., Professor of Chemistry in University College.

The substance which is the subject of investigation in this paper is a volatile oil, obtained by distillation from a mixture of bran, sulphuric acid and water, and is designated by the author by the name of *furfurol*. Its chemical composition is expressed by the formula $C^{15} H^6 O^6$, and its properties are the following:—When free from water and freshly rectified, it is nearly colourless; but after a few hours, it acquires a brownish tint, which eventually deepens almost to blackness. When in contact with water, or when not properly rendered anhydrous, it is less subject to change, and merely assumes a yellow colour. Its odour resembles that of a mixture of bitter almond oil and oil of cassia, but has less fragrance. Its specific

gravity at 60° Fahr. is 1·168; it boils at 323° Fahr., and distils at that temperature without alteration. It dissolves to a large extent in cold water and also in alcohol. Its solution in concentrated sulphuric acid has a magnificent purple colour, and is decomposed by water. Nitric acid, with the aid of heat, attacks the oil with prodigious violence, evolving copious red fumes, and generating oxalic acid, which appears to be the only product. It dissolves in a solution of caustic potash, forming a deep brown liquid, from which acids precipitate a resinous matter. With a slight heat, it explodes when acted upon by metallic potassium.

When placed in contact with 5 or 6 times its bulk of *Liquor ammoniæ*, it is gradually converted into a solid, yellowish-white, and somewhat crystalline mass, which is very bulky, perfectly soluble in cold water, and easily obtained in a state of dryness under a vacuum. The formula expressing the chemical constitution of this substance, or of *furfuroamide*, as the author calls it, is $C^{15} H^6 N O^3$, and it is classed by him with the *amides*. The oil itself appears to be identical with the substance described by Dr. Stenhouse under the name of *artificial oil of ants*. Another substance, isomeric with the amides, and of which the formula is $C^{30} H^{12} N^2 O^6$, was obtained by the author, and termed by him *furfurine*, and found to have the properties of a vegeto-alkali, and to form saline compounds with various acids.

February 6, 1845.

SIR JOHN WILLIAM LUBBOCK, Bart., V.P. and Treas. in the Chair.

"On a new Bleaching Principle produced by the slow Combustion of Æther in Atmospheric Air, and by the rapid Combustion of Bodies in a Jet of Hydrogen Gas." By C. F. Schœnbein, Professor of Chemistry in the University of Basle, &c. Communicated in a letter to Michael Faraday, Esq., F.R.S., &c.

The author, having observed that a peculiar principle, in many respects similar to chlorine, was developed during the slow combustion of phosphorus in the atmosphere, was led to inquire into the product of the slow combustion of the vapour of æther mixed with atmospheric air. He finds, that besides well-known compounds, such as aldehydic, formic and acetic acids, there is evolved a principle hitherto unnoticed, which possesses oxidizing and bleaching properties in an eminent degree. It decomposes indigo, iodide of potassium, and hydroiodic acid, and also, though more slowly, bromide of potassium. When in contact with water, it converts iodine into iodic acid, and sulphurous into sulphuric acid, changes the yellow ferro-cyanide of potassium into the red, and the white cyanide of iron into the blue; it transforms the salts of protoxide of iron into those of the peroxide; and it discharges the colours produced by sulphuret of lead. The author points out the similarity between the action of this substance, in these instances, and that of chlorine and of ozone.

Analogous results were obtained from the combustion of a jet of